The Pros and Cons of Chatgpt Application in Higher Education - How to Be A "Middleman" Correctly

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Abstract. Since the rapid development of the information age, artificial intelligence has been widely used in various fields. Among them, ChatGPT, as a representative application, has become a hot topic in higher education in recent years. Artificial intelligence tools have significantly improved the efficiency and quality of higher education, which is conducive to developing the "innovative education " model, decomposing educational tasks, and developing multi-faceted in-depth teaching. However, there are risks in the application of ChatGPT in higher education. Mainly in terms of information accuracy. ChatGPT may find it difficult to guarantee the absolute accuracy of all output information due to the extensiveness and complexity of data sources. In addition, students' excessive dependence on ChatGPT may weaken their motivation and ability for autonomous learning and affect their personal growth and development. At the same time, privacy and security issues are also aspects that cannot be ignored. Finally, technical limitations and stability issues also restrict the effectiveness of ChatGPT. Technical failures or updates may bring unnecessary interference and risks to the educational process. Therefore, how to use artificial intelligence tools correctly, whether ChatGPT is more harmful than beneficial to higher education, and the opportunities and challenges it faces in higher education all require "middlemen" to make correct assessments.

Keywords: Higher education; ChatGPT; smart education; ethics.

1. Introduction

ChatGPT is a chatbot prototype launched by OpenAI in November 2022. Two months after its launch, the number of active users reached hundreds of millions, while Facebook took 54 months and TikTok took 9 months to reach hundreds of millions of monthly active users. It is a language model dedicated to dialogue generation, which can generate intelligent answers based on the text entered by the user. In the information age, generative artificial intelligence has broad application prospects. The involvement of ChatGPT in the field of higher education will further stimulate its application potential improve the quality of higher education, and help educators "innovate educational models to adapt to the development trend of future education", while "optimizing learning tools, improving students' learning experience and quality", and injecting new vitality into the innovation and development of higher education by "integrating educational resources and content and significantly improving teaching efficiency". However, research by American universities has found that ChatGPT has significant advantages and disadvantages in higher education applications. The advantages mainly include improving teaching efficiency and quality, deeply expanding research theories and methods, and significantly shortening work education time. But there are also obvious risks, such as the possibility of large-scale academic fraud and threats to academic integrity and ethics. Lai Yu, Chief Knowledge Officer of Cybersecurity, Wu Wei, and others stated that recognizing the nature and limitations of ChatGPT, analyzing potential risks and challenges, combining information security and ethical constraints, proposing corresponding risk assessment standards, and countermeasures and suggestions for promoting the healthy development of artificial intelligence technology are essential for the development planning and implementation of similar artificial intelligence technologies [1].

Since its launch, ChatGPT has attracted widespread attention from all walks of life. Because of its distinctive features and advantages, it is favored by college teachers and students, especially those engaged in higher education. ChatGPT can greatly save time and complete academic work more efficiently. But at the same time, the application of ChatGPT in the field of higher education will also bring many adverse effects, such as academic fraud. According to the New York Times, Antony

Aumann, a professor of philosophy at Northern Michigan University, read what he called "the best paper in the class" when grading papers for the world religions course, but this paper was created by a student using ChatGPT [2]. Second, the application of ChatGPT may undermine intellectual property rights. Internationally renowned linguist Chomsky has previously publicly stated that ChatGPT is a high-tech plagiarism system that discovers patterns from massive data and connects the data according to the rules to form articles and content that look like human writing. Fang Chaoqiang, a lawyer at Beijing Yingke (Hangzhou) Law Firm, said that the AI training process inevitably involves the copying and use of copyrighted works of others, which poses a certain risk of copyright infringement. Third, over-reliance on ChatGPT will lead to homogenization of education. The essence of ChatGPT is a model of language learning. China Magazine Network shows that excessive use of AI tools may lead to a decline in people's thinking and judgment abilities, forming a certain degree of dependence and inertia. Therefore, correctly evaluating language tools such as ChatGPT and understanding the pros and cons of such tools are the prerequisites for using such tools. This article will analyze the actual application cases of ChatGPT in American colleges and universities and other educational situations, evaluate the pros and cons of artificial intelligence tools, and provide scenarios and analysis for practical applications.

2. Advantages of ChatGPT in Teaching Scenarios in Higher Education

ChatGPT has made many contributions to the improvement of teaching mode and teaching content. First of all, the innovation effect. Since 2020, China's traditional education model has been extensively inseparable from language technologies such as ChatGPT. With the development of ChatGPT, traditional educational technology improved and changed a lot, and a new teaching method has gradually entered people's field of vision. Secondly, it is easy to combine teaching content. The core task of education focuses on "what to teach", that is, carefully constructed teaching content, and these carefully planned knowledge systems are ultimately embodied through systematic courses. ChatGPT control the entire process and integrate all aspects of the course, thereby fully integrating teaching content and improving teaching efficiency. In addition, "ChatGPT adopt the 'Socratic teaching method' to teach students how to through discussion to answer question, and even debate, and ChatGPT can give students necessary feedback and help students when they need [3]." This method enables students to use smart devices sensibly to finish their work in class and enables students to learn this method, providing more choices for high-level talents. Finally, it reduces the pressure on educational tasks, such as intelligent question answering and tutoring, learning resource recommendations and personalized learning paths, reducing the burden on teachers and improving efficiency, etc., which can allow students to learn independently to a certain extent. On the other hand, the use of artificial intelligence tools has reduced the teaching burden of educators. Moreover, this learning method is being frequently used by many higher education institutions. Therefore, students can use ChatGPT learning tools to improve their accumulation of declarative knowledge and deepen their understanding of procedural knowledge, thereby achieving a combination of "dynamic" and "static", thereby improving students' learning quality and efficiency [1].

3. Disadvantages of ChatGPT in Teaching Scenarios in Higher Education

There are many flaws in AI tools. For example, there are issues with information accuracy, lack of information depth and critical thinking, dependency and autonomy, privacy and security, technical limitations, and stability. First, accuracy is a common problem with AI tools. ChatGPT has been favored by higher education practitioners because of its rich data, comprehensive functions and innovative model [1]. The source of data generated by ChatGPT is difficult to guarantee. It is easy to encounter the situation that "the results given by ChatGPT may not always meet human expectations, and even because of the fabrication of non-existent or wrong facts, the output content may appear to be consistent with language logic but inconsistent with facts or inaccurate" [4]. Another is security

risk. AI tools lack data review and protection mechanisms. Common problems include personal privacy leakage, data leakage, unauthorized access to student data, and the use of student data for purposes other than education [5]. There is also a crisis of intellectual property rights. At present, ChatGPT is frequently used for scientific research purposes. If it is not used properly, it will infringe intellectual property rights [1]. Another potential threat is the threat of values. ChatGPT's current value system is mainly based on Western values for training and construction, which is significantly different from China's value system. This mismatch phenomenon can easily lead to the infiltration of bad values, which in turn may cause a series of ethical problems and challenges. Moreover, it has the potential to cause "information illusions". The deep fake technology of "information illusions" will confuse individual understanding and social cognition, and over time will lead to the loss of the pursuit of truth and the disorder of the value system [4]. Finally, there is the dependence on long-term use. ChatGPT is a new type of artificial intelligence tool. After several generations of transformation and upgrading, it has acquired some capabilities that it did not originally have. This includes article writing. However, some college teachers and students frequently use this type of function due to their eagerness for quick success, resulting in obvious problems and academic errors in the articles they write. ChatGPT is at best just a language model, but those who use it often have clear goals, and almost all rely on this tool, losing their innovation ability.

4. Application of ChatGPT in Different Educational Settings

First, ChatGPT’s involvement in higher education has introduced the “smart education” model. Smart education refers to a new model that uses computers as carriers and information technology as applications, which relies heavily on computers. The level of information technology determines the effectiveness of the “smart education” model [3]. ChatGPT is currently the most advanced language model tool. The application of this type of skill in the higher education field has basically innovated the “smart education” model, realized the iteration of educational means, educational methods, and educational tools, and thus improved teaching efficiency [1]. Secondly, ChatGPT’s involvement in higher education is more convenient for promoting interdisciplinary integration. Scientific interdisciplinary integration is the cultivation of compound and innovative talents, but traditional single-discipline construction cannot be so efficient and have the best of both worlds. Because ChatGPT can integrate huge amounts of data and improve language systems to carry out disruptive innovation [1]. Course design usually needs to consider factors such as course objectives, course positioning, and student conditions, which is usually a cumbersome process. ChatGPT integrates educational information such as discipline dynamics information, educational policies, and online learning data to form a huge information database and further summarizes the educational objectives of current discipline courses [4]. Traditional higher education emphasizes "inclusion" in the selection of course content, that means, all relevant content and details of a certain subject is included, and core resources and marginal resources coexist. This results in undesirable phenomena such as redundant course content and waste of educational resources. ChatGPT emphasizes "selection". It can effectively filter out content that meets the course requirements according to instructions and truly achieve "integration" [5]. In addition, ChatGPT also takes into account the latest information data, so that the course content is "updated in real-time", which to a certain extent eliminates the lag in course content and closed course design [6].

5. Difficulties and Threats faced by ChatGPT

Data leakage has become a potential risk and defect that cannot be ignored for artificial intelligence tools. Some scholars believe that "if artificial intelligence and higher education are combined in the future, a large number of ChatGPT-like intelligent products with commercial value and low usage threshold will lead to more severe challenges to learners' privacy and information security protection [7]. ChatGPT has the problem of being difficult to accurately control in dealing with the complex and

ever-changing values and moral values of human beings. This may lead to people with ulterior motives taking advantage of technical loopholes, undermining academic integrity, encouraging academic misconduct, and even tempting students to cross the legal red line and engage in criminal activities, thereby causing adverse effects on society. This is the "technical black box" with opacity and explainability [8]. Ethical issues are also the main risk of artificial intelligence tools. ChatGPT does not have much knowledge about ethics. Ethics requires users to have correct values and ways of thinking, and also to conform to social behavior. If the database is artificially contaminated, students who do not yet have ethical values will be largely poisoned by bad values and may even become destroyers of social public order. Zou Kailiang pointed out that ChatGPT is an algorithm model fed by political value texts and designed by political vassals. It has been fed by political bias from the beginning and has obvious political value bias [9]. When using ChatGPT, college students are often misled by Western political value biases and form incorrect political values. At the same time, ChatGPT also analyzes relevant political public opinion, higher education models, and student learning tendencies by integrating key information and cutting-edge information on higher education in various countries, thereby improving the algorithm's ideological communication function and communication methods, which makes China's higher education continue to be threatened by potential Western ideological hegemony [10]. Third, dependence is also a risk of ChatGPT. Higher education is not a single knowledge dissemination activity but rather takes the cultivation of students' learning and practical abilities as its primary goal. It is a long-term project of "gradual progress". Therefore, educators should refuse to use ChatGPT to directly obtain answers. Instead, they should cultivate their autonomous learning ability by stimulating the learning interest of college teachers and students and eliminate their blind confidence and excessive dependence on artificial intelligence. Secondly, smart education is an innovation and expansion of traditional education. Although some people strongly oppose the behavior of over-trusting artificial intelligence, ChatGPT, as the latest achievement developed by OpenAI, is also a major opportunity facing the field of higher education. It needs to be introduced into higher education in the right way to achieve the update and iteration of the smart education model [1].

6. Conclusion

Modern educational technology based on artificial intelligence is an important means to improve the quality of higher education. Therefore, ChatGPT has attracted attention in the field of higher education since its birth. ChatGPT has indeed benefited the development of higher education with its fast feedback speed, strong dialogue ability, and wide application range, but whether its advantages can be truly transformed into a strong driving force for the development of higher education still needs careful consideration. If ChatGPT is properly used, it will effectively promote the innovation and development of higher education models and provide strong support for cultivating high-quality and high-quality talent teams. However, if it is used improperly, it may become a tool for college teachers and students to evade learning responsibilities, engage in academic misconduct, and even seek illegal interests, thus triggering a series of serious risks and challenges. To prevent and respond to related risks, the whole society needs to work hard from both technical and subject aspects, not only to regulate algorithms but also to enhance the rational thinking of subjects. With the rapid development of technology, ChatGPT will be iteratively updated, which also means that higher education faces more opportunities and challenges, and there is still a long way to go to promote ChatGPT to empower higher education.

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